Pedestrian Study

Back Bay Federation

This report was prepared for the Back Bay Federation for Community Development by Deborah Poodry and Tunney Lee while under contract to the Massachusetts Turnpike Authority. We wish to thank them for their effort and time.

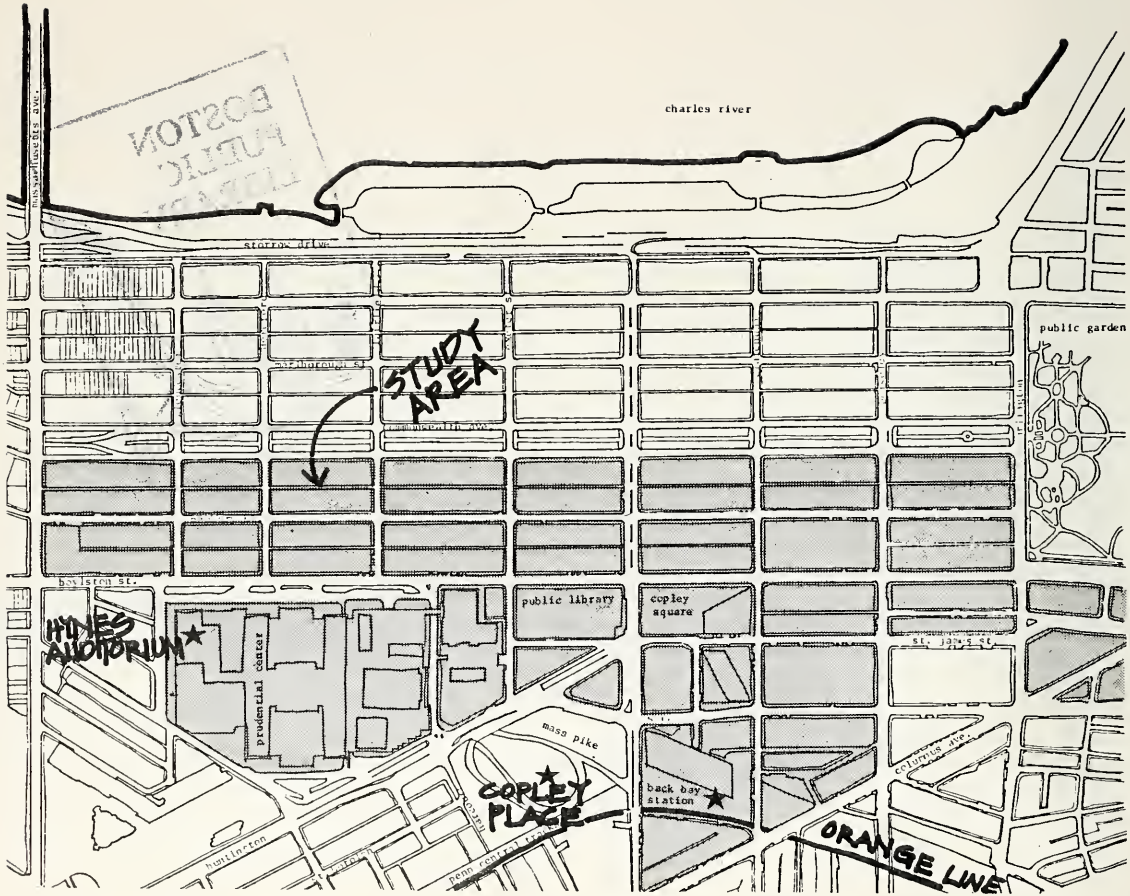
We also wish to thank the Prudential Insurance Company of America for having printed this aspect of our Back Bay Marketing Study.

BACK BAY FEDERATION FOR
COMMUNITY DEVELOPMENT

Stuart Robbins
Executive Director

August, 1978

Overview


charles river
storrow drive
public garden
STUDY AREA
boylston st.
HYNES AUDITORIUM
prudential center
public library
copley square
st. james's st.
mass pike
COPLEY PLACE
back bay station
ORANGE LINE
huntington
dartmouth st.
columbus ave.

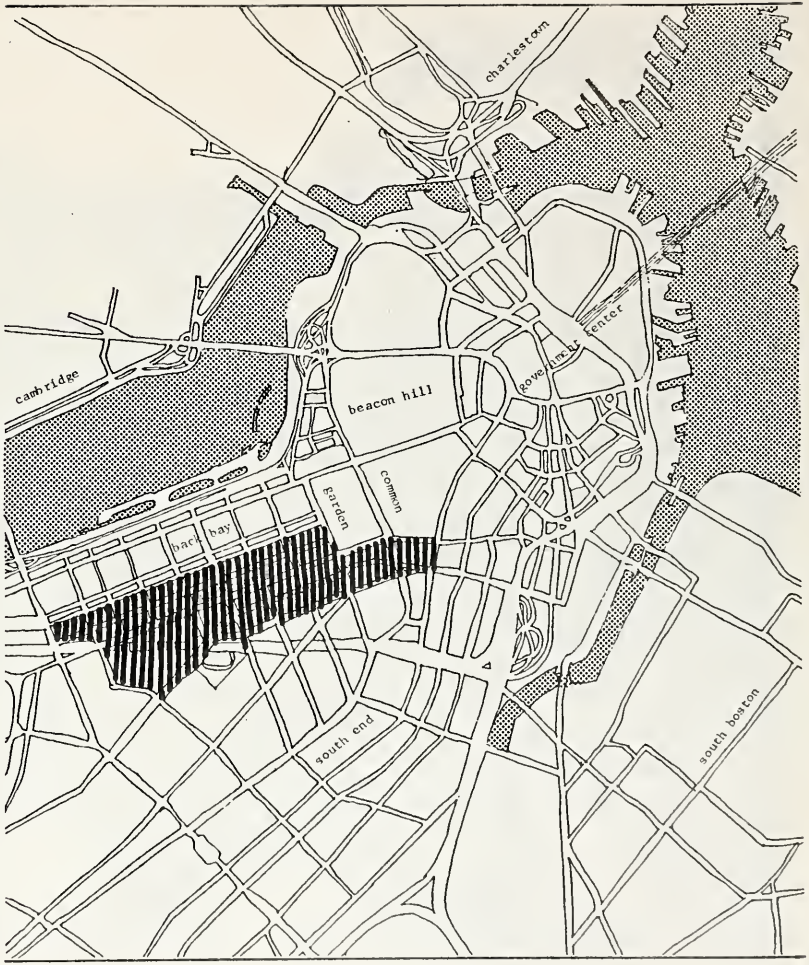
Overview

This is part of a study to examine conditions in the Back Bay, directions for neighborhood improvement, and potential development impacts on the business area. This report concentrates on the pedestrian, transportation and development impact aspects of the commercial area of the Back Bay.

In addition tn a perceived need to enhance the retail character of the area, several substantial potential developments in or adjacent to the neighborhood make this evaluation necessary. The proposed commercial expansion at Copley Square, transportation improvements at Back Bay Station, possible expansion of Hynes Auditorium, and office and hotel components at Copley Place will impact the area in a number of ways. These proposed developments are at the opposite side of Back Bay from established commercial areas. They may serve either to expand the retail district, or may create an unconnected new center of activity, leaving the older areas isolated. This report is part of the information analysis and recommendations necessary to inform the processes of modifying development impacts in the Back Bay, and considering growth directions for the commercial area.

The study area is defined as Newbury and Boylston Streets from Arlington to Mass. Ave., Huntington Ave. from Harcourt to Copley Sq., and Dartmouth St. from the Penn Central rail lines to Newbury Street.

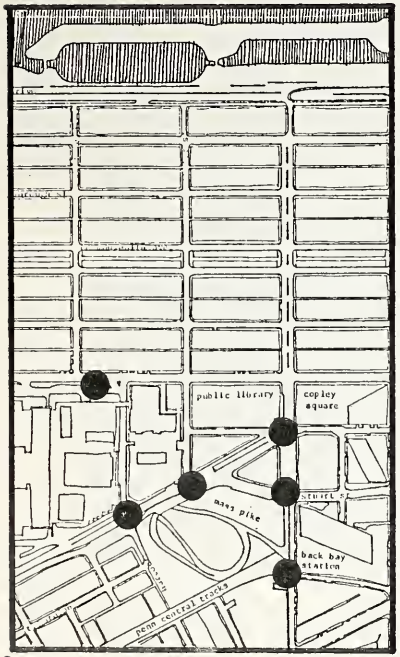
The report is broken into three major sections. The context section presents the existing conditions, forces for change, and pedestrian environments in the Back Bay. Locations, programs, construction schedules and potential impacts of the developments proposed for the area are summarized. The next section analyzes this information and points up major areas of concern, major opportunities for change, and makes recommendations for action. The final section contains an appendix to the pedestrian study.



Next Steps

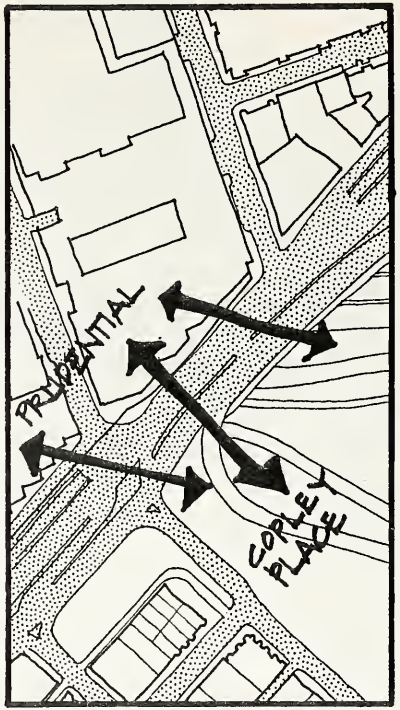
1

The City should substantially improve the ease of crossing and the appearance of those intersections and walkway areas identified as problematic, especially along Dartmouth Street from Copley Square to the Penn Central tracks.



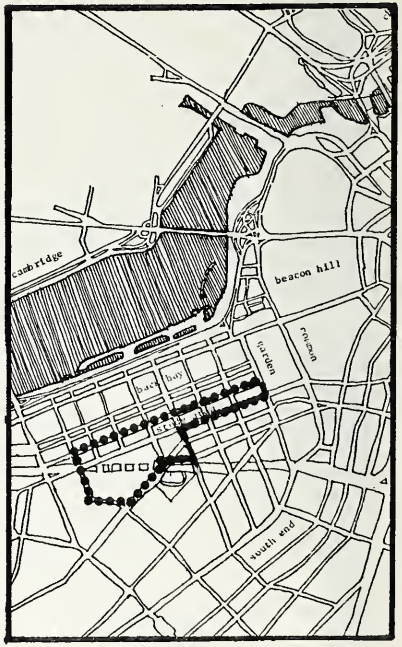
2

Pedestrian connections should be built from the Copley Place to Prudential by the respective owners of those projects.



3

A feasibility study should be undertaken to determine whether a shuttle bus service is an effective way of tying the enlarged Back Bay commercial area together. This scope of services should be a joint effort of the developers, city and neighborhood groups.

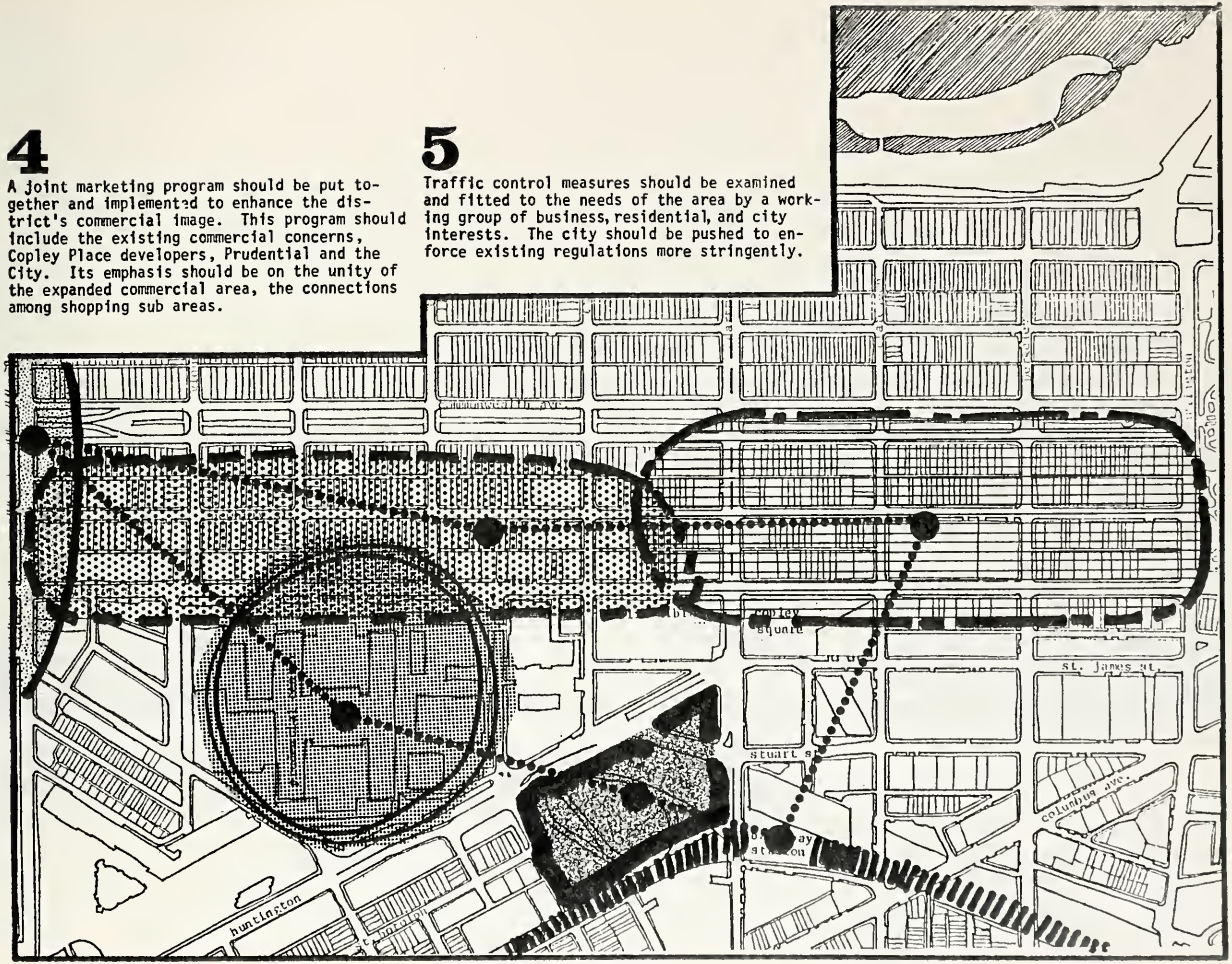


4

A joint marketing program should be put together and implemented to enhance the district's commercial image. This program should include the existing commercial concerns, Copley Place developers, Prudential and the City. Its emphasis should be on the unity of the expanded commercial area, the connections among shopping sub areas.

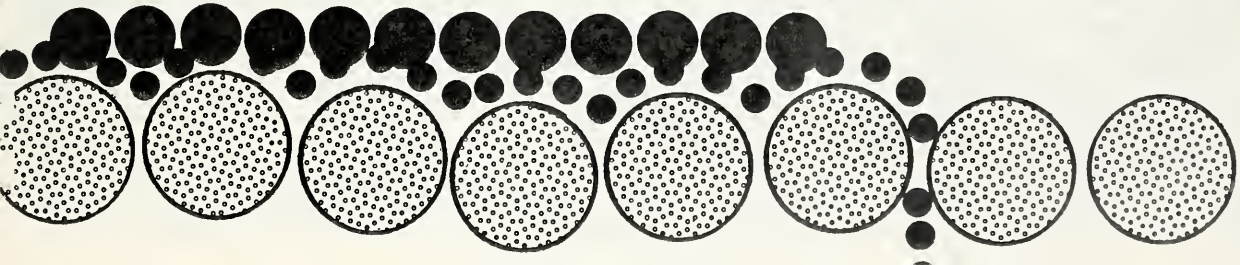
5

Traffic control measures should be examined and fitted to the needs of the area by a working group of business, residential, and city interests. The city should be pushed to enforce existing regulations more stringently.



Context

Transportation



1 ARLINGTON · GREEN LINE

ARBORWAY EST. DAILY BOARDINGS (1974) = 14649

EXISTING ORANGE LINE = 36,418
EST. 1980 ORANGE LINE = 55,565

2 COPLEY SQUARE

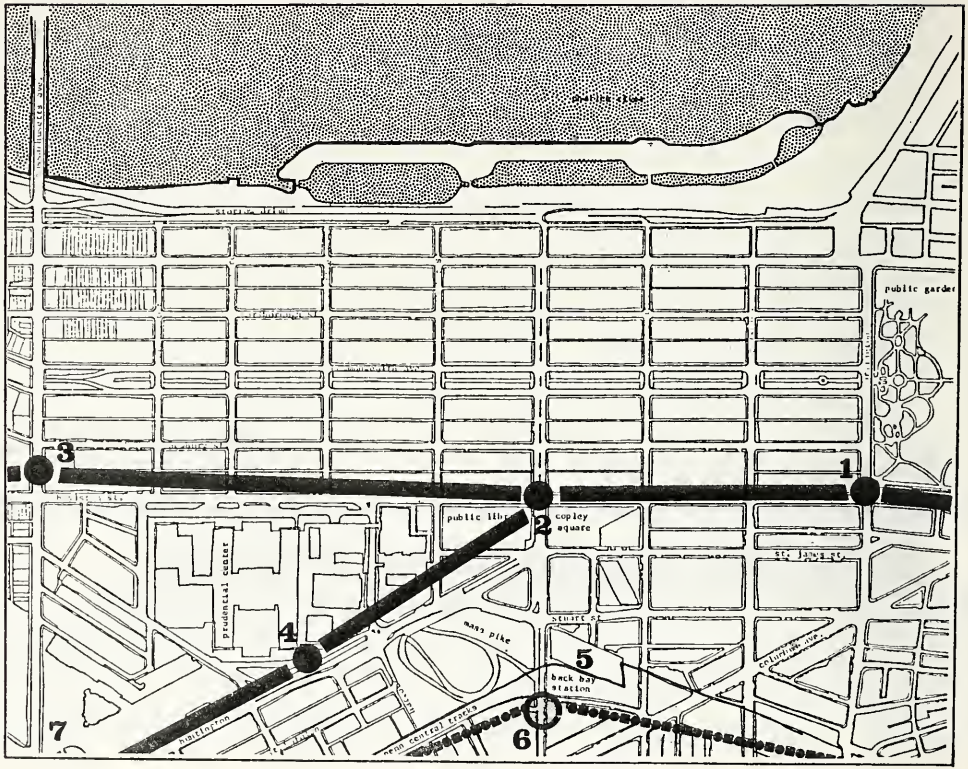
3 AUDITORIUM

4 PRUDENTIAL

5 BACK BAY RAIL
1840 RIDERS PER DAY

6 BACK BAY · ORANGE
(DOVER STA = 1974
3064 RIDERS P.D.)
1995 EST. = 9150

7 SYMPHONY · GREEN
MASS AVE · ORANGE
(NORTHAMPTON · 1974
= 3692 RIDERS P.D.)
1995 EST = 3630
RIDERS P.D.)

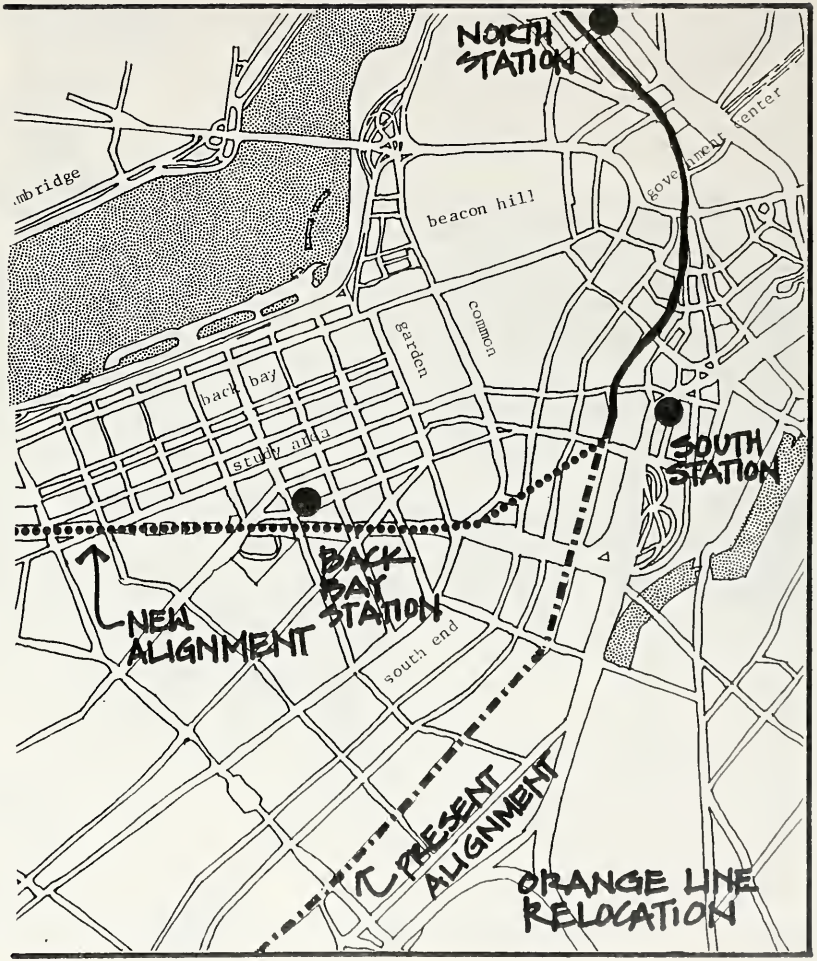


Subway & Rail

The study area is presently served by the MBTA Green line, with stations at Arlington St., Copley Square, Prudential, and Mass. Ave. Volumes of the stations at present are summarized on the accompanying map. All of the stations in the Back Bay area have already been modernized, so major renovation is unlikely in the near future. The Arborway shuttle service, consisting of MBTA busses, also runs through the Back Bay.

The Orange line, presently located in the South End, will be relocated to run at the edge of the Back Bay. The Southwest Corridor project, which involves this relocation, as well as rebuilding of parts of area rail lines, has been underway for several years. Construction on the new Orange line is expected to begin in late 1979, and by 1984 will provide a new and major means of access to the Back Bay. Present and future Orange line routes are summarized on the following map, along with projected and current station volumes.

Orange line stations in the Back Bay will be at Mass. Ave. and at the present Back Bay rail station. The station's present volume of rail commuters and intercity rail passengers will be augmented by passengers from the subways, producing a major transportation node.

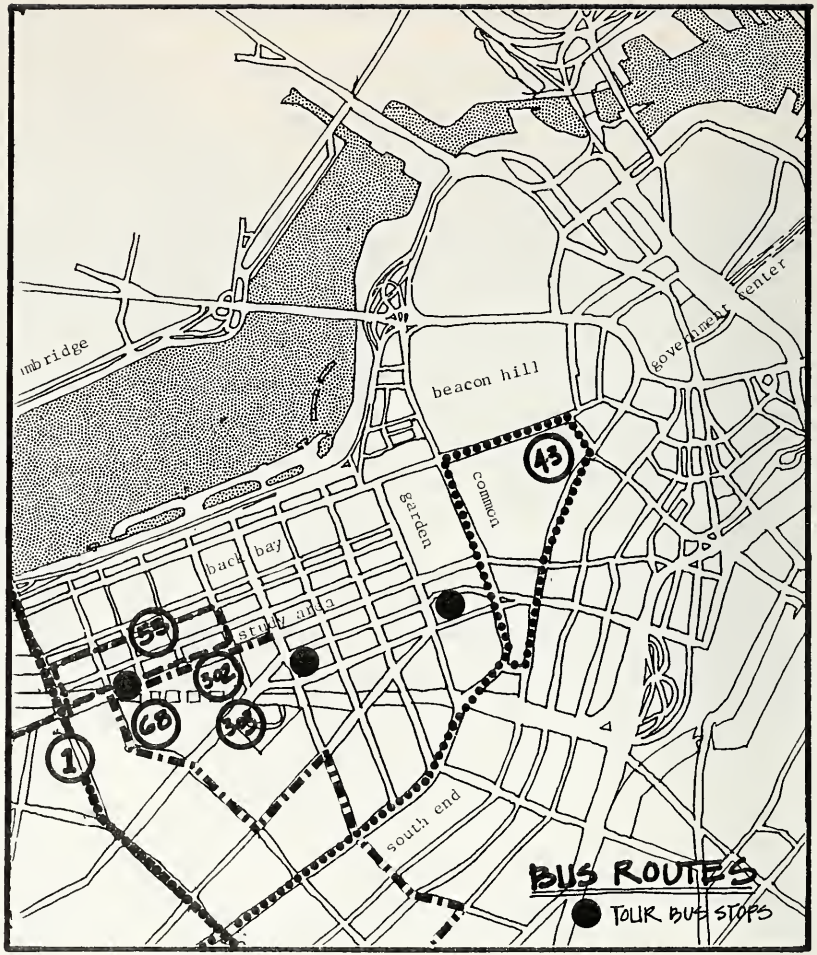


Bus

Bus Service - The area is not particularly well served by MBTA busses, but there are many special services and shuttles which result in a substantial number of buses present in the Back Bay.

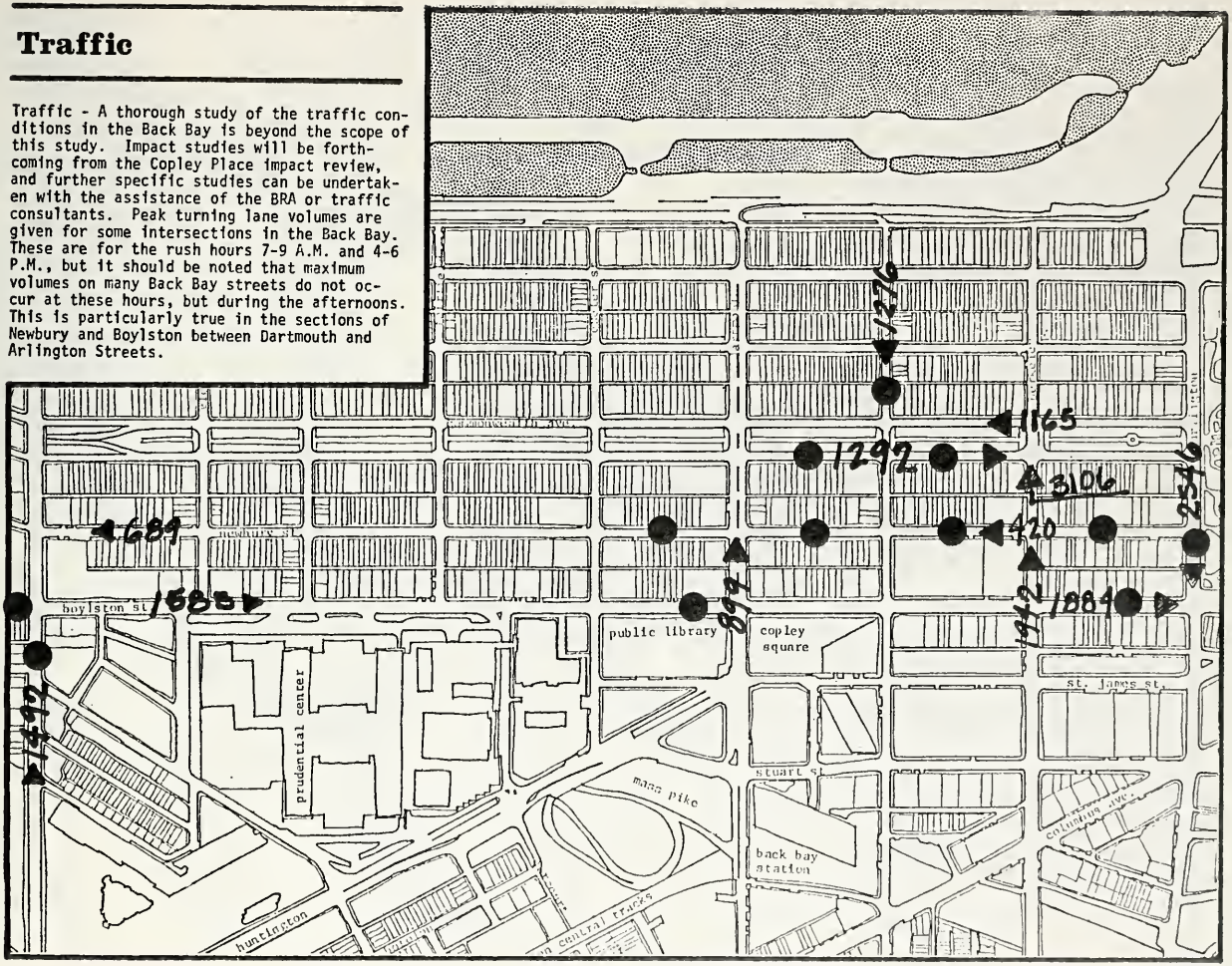
MBTA bus lines include the nos. 68, 1, 55, and 43 routes, and two express routes, 302 and 303. The Dudley route, No. 1 along Mass. Ave., is heavily travelled, and the 55 route is moderately used. The 68 route, which connects to the South End, and the two express routes (to Riverside and Watertown) are very lightly travelled. The express routes run only at rush hour, and the 68 at 25-minute headways, as there is only 1 bus on the route. The Egleston route (43) is fairly heavily used, but only touches the Back Bay at the extreme downtown end, where the route loops around the Common. As was mentioned previously, the Arborway subway shuttle operates from Copley Square, using busses which stop at the Public Library.

There are a number of private and special bus services in the area. Greyline tours start and end their 7 daily sightseeing tours from three Back Bay locations - the Sheraton, Copley Plaza, and Park Plaza Hotels; and other coach lines and shuttles use Copley Square as a major stop.



Traffic

Traffic - A thorough study of the traffic conditions in the Back Bay is beyond the scope of this study. Impact studies will be forthcoming from the Copley Place impact review, and further specific studies can be undertaken with the assistance of the BRA or traffic consultants. Peak turning lane volumes are given for some intersections in the Back Bay. These are for the rush hours 7-9 A.M. and 4-6 P.M., but it should be noted that maximum volumes on many Back Bay streets do not occur at these hours, but during the afternoons. This is particularly true in the sections of Newbury and Boylston between Dartmouth and Arlington Streets.



Parking

The information presented here is a partial data base outlining parking conditions in the Back Bay. A number of impact issues, such as spillover parking in residential areas and maximization of accessibility to commercial establishments, should be taken up as extensions from this work. The parking freeze restricts the number of available spaces in the city as a whole, so the question of adequate numbers of spaces is to some extent less important than the search for other transportation modes to augment the MBTA, thus providing increased accessibility as with less impact on adjoining areas.

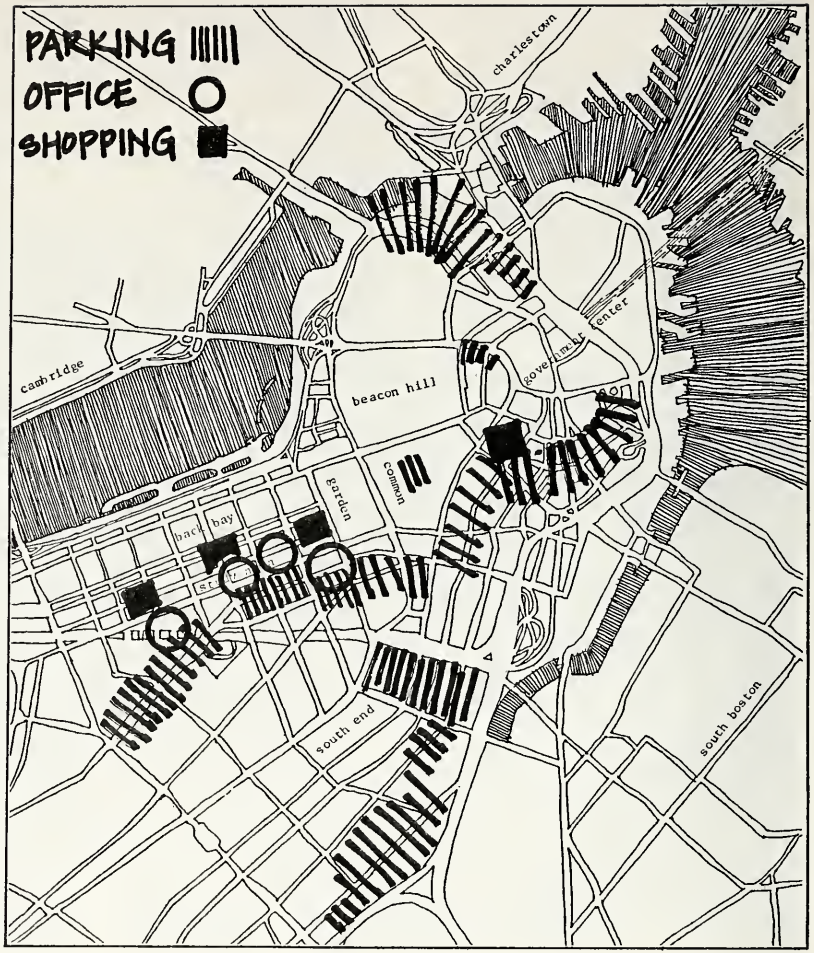
Four aspects of parking in the Back Bay are considered here.

First is distribution of parking. Second is the parking capacity of the area. Third is the usage characteristics of this stock of spaces, and finally, the parking freeze must be considered as it affects the Back Bay.

Much of the detailed information in this section is from the Wilbur Smith Assoc. report of 1974.

Distribution

Most of the parking spaces which serve the Back Bay non-residential uses are in a band of facilities east of Tremont St., south of Stuart St., and in garages along Huntington. Major employment centers are between the parking areas and Back Bay retail areas. This can be a disadvantage in that shoppers are some distance from the retail concentrations, and stores along Boylston and Newbury are less likely to benefit from work-generated pedestrian trips. In addition to this band of parking facilities, there is extensive on-street metered parking in the retail areas. The Back Bay has the highest concentration of such on-street parking of any area of Boston Proper.

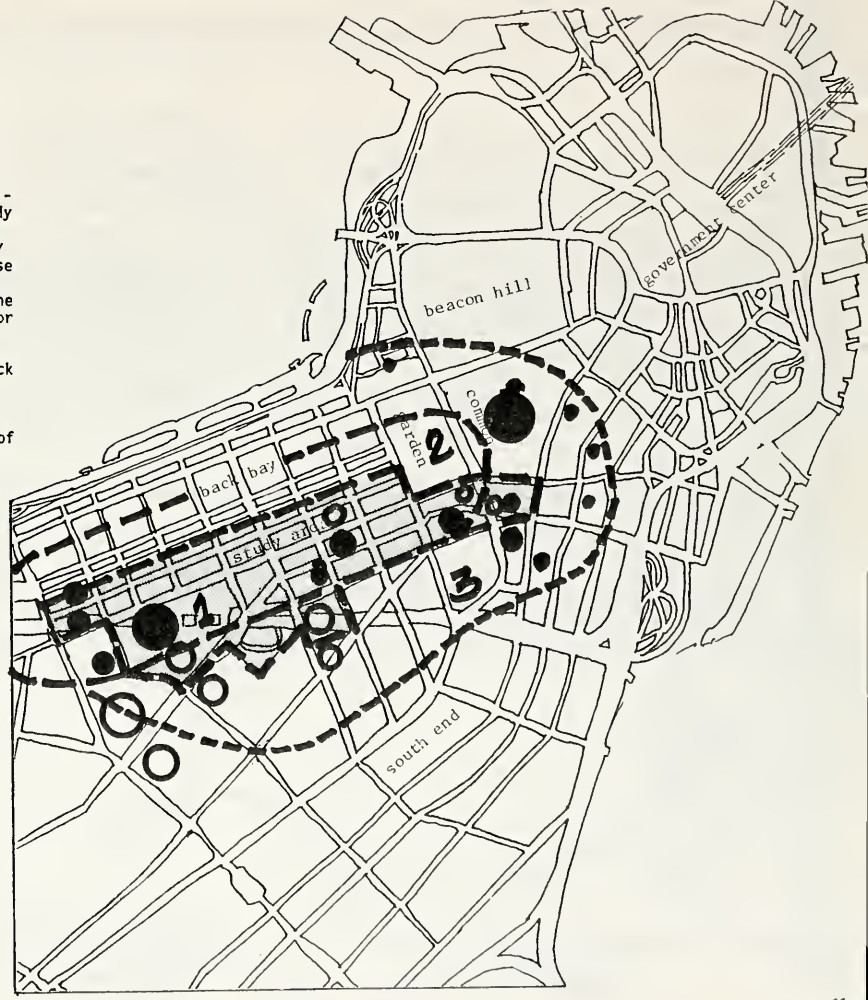


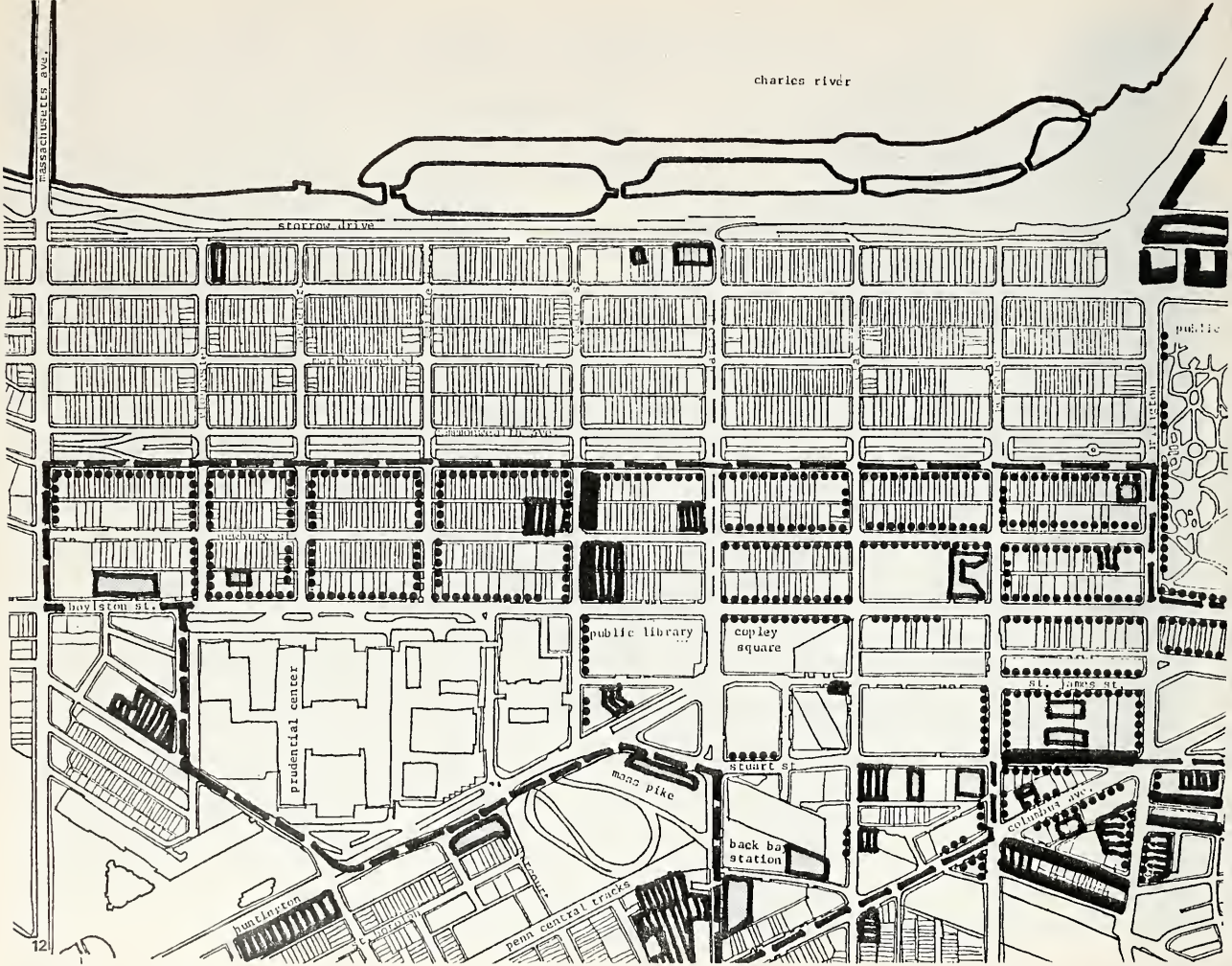
Capacity

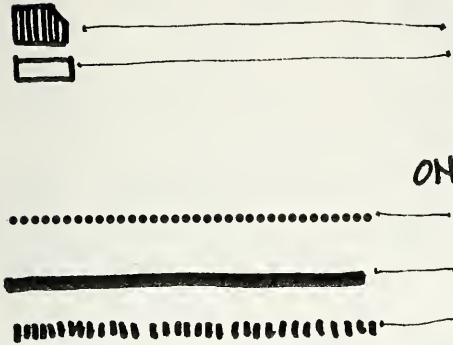
Parking Capacity - The available spaces are categorized by type - e.g. private garage, public lot, short term meter - and by zone. The zones are defined by an average walking distance from car to destination - 900' for the Back Bay commercial area, and 1600' for the residential area around Marlborough St. - which was developed in the Wilbur Smith study of 1974. Zone 1 figures are the number of parking spaces available within the Back Bay commercial district. Zone 2 spaces are those additional spaces available outside Zone 1, but not more than 900' from Boylston St. Zone 3 spaces are those not included in Zones 1 or 2, but within 900' from any edge of Zone 1. Zone 4 spaces are those additional spaces available within walking distance of the Back Bay as a whole.

In the Wilbur-Smith Assoc. study of parking (1974), the Back Bay had approximately 30% of the available spaces in the Boston Proper freeze area.

ZONE	1	2	3
PUBLIC GARAGES ●	5529	50	4847
PRIVATE GARAGES ○	1231	-0-	1495




charles river
massachusetts ave.
storrow drive
dartmouth st.
clarendon st.
boylston st.
public library
copley square
prudential center
mass pike
stuart st.
back bay station
huntington
penn central tracks
columbus ave.
st. james st.
public



TYPE OF SPACE	ZONE 1	2	3	TURNOVER
OFF STREET				
PUBLIC GARAGE	5529	50	4847	1.04
PRIVATE GARAGE	1231	— o —	1495	2.31
PUBLIC LOT	595	334	1439	1.87
PRIVATE LOT	282	236	657	2.88
SUBTOTAL	7637	620	8438	
ON STREET				
METERED	488	—	—	2.16
UNMETERED	1046	—	—	5.16
OTHER	146			2.56
SUBTOTAL	1680			
CAPACITY	9317	620	8438	1.73
MODAL CHARGES				
30 MIN.	$ 0.75	0.75	0.75	
1 HOUR	$ 1.00	1.50	1.50	
2 HOURS	$ 2.00	3.00	1.50	
DAILY	$ 3.00	3.00	3.00	

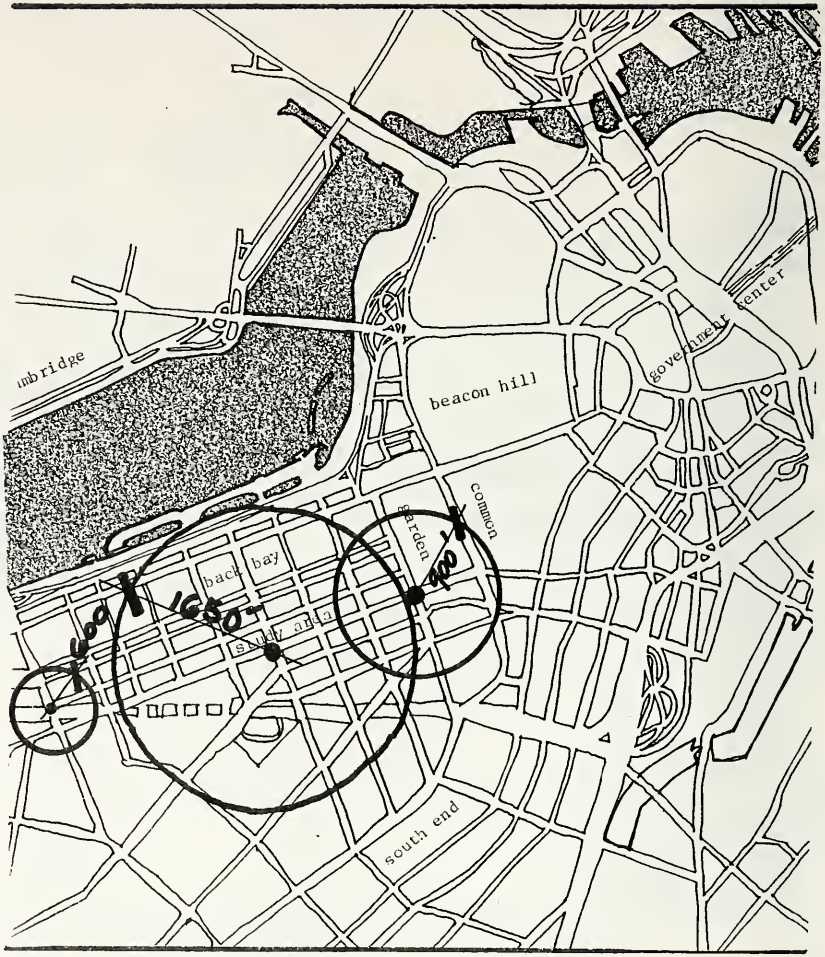
Usage

Usage Characteristics - The significance of the numbers of spaces may be made clearer by looking at some characteristics of the parking. The first of these is ratio of parking space to sf of non-residential uses - There are approximately 2.7 spaces per 100 sf, or about 10 sf of non-parking built space for each sf devoted to parking.

The second is walking distance from parking space to destination. Distance varies with the purpose of the trip, as well as with the type of parking facility. Those in private lots will walk, on average, 1700 feet or more to their destinations, while those in private garages do not average more than 170 feet. The city wide average is 895', and the average distance people walk from the Prudential garage ranges from 304' for shoppers to 840' for those on personal business.

Average walking distances in the commercial area of the Back Bay, as a whole, range from 405' for shoppers to 905' for those on personal business, averaging 632'. These walking distances are somewhat lower than those in other parts of the city, but this may be due to several factors. Walking distances from the Prudential are lower than from many major garages, and, in combination with the fairly high number of people who park in and shop from the Pru, this may unbalance the average. The extensive availability of on-street parking may also be a factor.

Third usage characteristic is turnover - the number of cars to occupy a parking space in a day. Turnover in the Back Bay is generally above the city average, and is, for most types of parking, in the top three freeze-area zones in terms of turnover. The turnover rate for on-street parking (3.31) is somewhat more than twice as high as that for off-street parking (1.25), although some sorts of parking present much more extreme deviations - 15 minute metered spaces vs. contract daily parking for example.



A fourth consideration is the purpose of the trip. This affects a number of factors, as already mentioned. It is possible to correlate type of parking facility to trip purpose. In Boston, private lots and private garages are dominated (86-95%) by employee parking. Public lots and garages are each likely to have 40-45% employee parking occupancy. Second biggest users of public lots are those on personal visits (26%), followed by shoppers, who use 10% of the spaces in public lots. Shoppers are most likely to choose public garages, followed closely by on-street spaces and public lots. Curb spaces are the first choice of personal business parkers.

A final consideration is the cost of parking. Most frequently occurring rates are shown in the following table. The most striking thing about parking rates is the increased variety in charges as facilities become closer to Boylston St. Those in Zone 3 have short-term, daily rates, and occasionally night rates. Near Boylston, however, there are contract, duration, daily, and reimbursible, as well as hourly rates.

Parking Freeze - Perhaps the most important parking factor is the "freeze". Mandated by the Federal Environmental Protection Agency to help reduce air pollution in the Boston area, these regulations limit the number of "commercial" spaces (those open to the public on payment of a fee) to the number of such spaces existing in Boston in 1973. New spaces can only be built if the same number of commercial spaces is eliminated elsewhere. Free parking spaces, and those not open to the public - private contract spaces for example, are not included in the restriction. Control over the number and allocation of spaces rests with the Boston Air Pollution Control Commission.

The Commission maintains a city-wide "bank" of spaces, which are allocated to locations by having applications filed to build new spaces or renew permits on old ones. Garages are given permanent permits; however parking lots are given only temporary permits, which must be renewed each year.

Off-street spaces in the Back Bay are primarily lot spaces. Those at Exeter and Newbury will be replaced by a private garage if the proposed housing is built, so these spaces will go into the bank. At present, there are about 250 spaces available through the bank for all development projects in Boston proper. 135 of these have already been applied for, and will probably be allocated this year. In allocating new commercial spaces, the city's priorities are, at present, the developments at Lafayette Place and South Station. Given these conditions, the immediate possibility of expanding the area's parking supply is slim. However, the situation may change by the time the project is ready for occupancy.

Change Forces

Several major projects and alterations in the transportation system serving the Back Bay are under study. The major ones are:

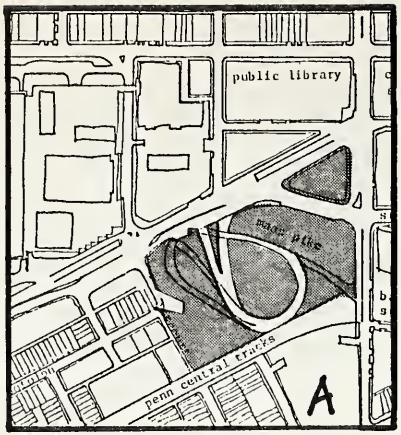
- Rebuilding of Back Bay Station
- Relocation of the MBTA Orange line
- Alterations of the Mass. Turnpike exit ramps at Copley Square
- Construction of a major garage at the Copley Place development
- Expansion of Hynes Auditorium.

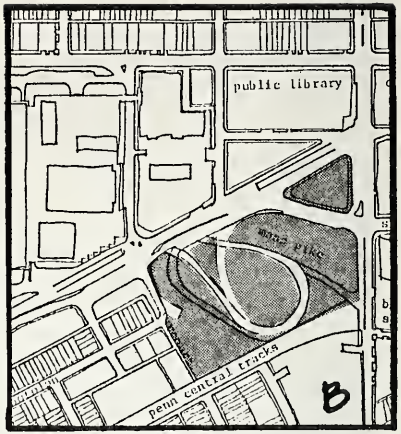
Back Bay Station will, when completed, include subway, commuter and inter-city rail lines. Major vehicular traffic will be focussed on Clarendon Street, where drop-off points and taxi stands will be located. Main pedestrian access points will be at street level on Dartmouth and Clarendon Sts., with additional access from a tunnel under Dartmouth St. to the Mass. Turnpike site, and a direct access tunnel to the John Hancock garage.

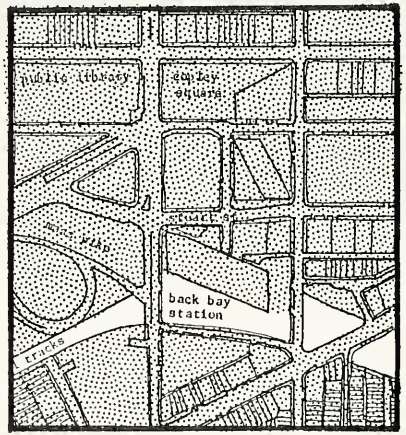
Ramp alterations connected with the Copley Place proposal are under study through the environmental impact review process. Alternatives include the elimination of Ramp C, with diversion of this traffic onto the other ramps; alteration of the location at which the ramps open onto Huntington Ave., and raising of the below-grade exit ramp to the level of Huntington, so that all traffic at this interchange would exit onto Huntington.

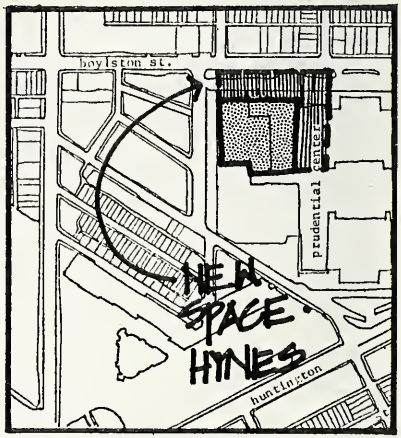
Should the Copley Place be constructed, it will bring an additional traffic load, both of pedestrians and cars, to the area. The magnitude and behavior of this traffic is also under study in the EIR process.

Expansion of Hynes Auditorium is under study by the BRA. At present, expansion would be contained within the boundaries of the existing Prudential development. The auditorium might take over part of the mall shop space and expand into Ring Road. Amount and location of parking for this expansion is uncertain, but would come under freeze regulations.









Pedestrians

This section will look at three aspects of the pedestrian study performed for the Back Bay. First is information, classification of data into indicators. Use of these to develop three measures of the characteristics of the pedestrian environment is explained in the appendix. Second, the key measures are applied to the Back Bay commercial area. Third, comments about the problem areas, possible improvements of the ped zones, and possible development impacts are presented. Additional information on methodology is available in the pedestrian appendix.

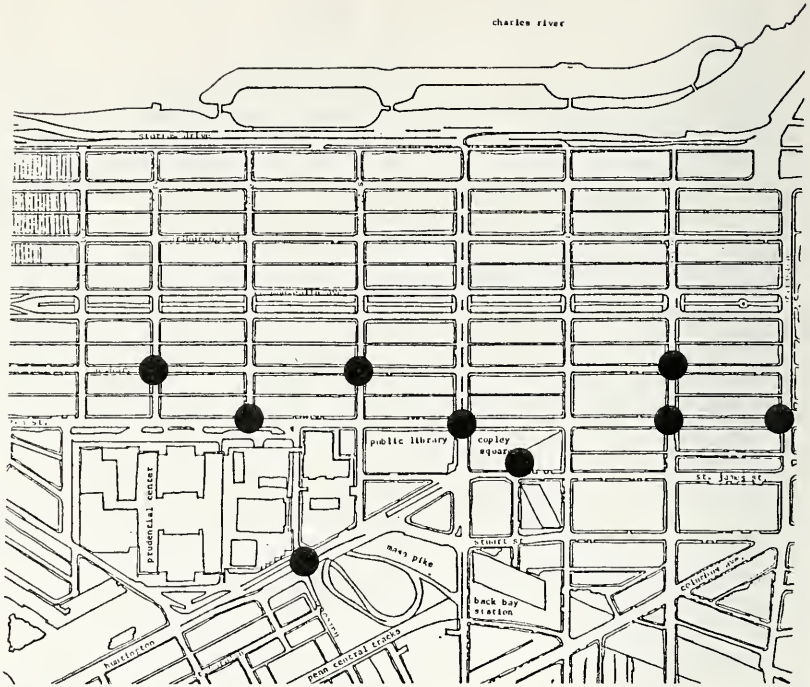
Scope & Method

The survey was confined to parts of the study area, and to on-street public pedestrian zones. The mall at the Prudential Center, for example, is not included; but the extended street-level plazas are. Representative times and locations are identified on the accompanying map. Times selected included A.M. and P.M. office rush hours, lunch hours, and afternoons during the week; also included was a Saturday afternoon. Data was collected on color slides taken at regular intervals for not less than two hours at each survey location.

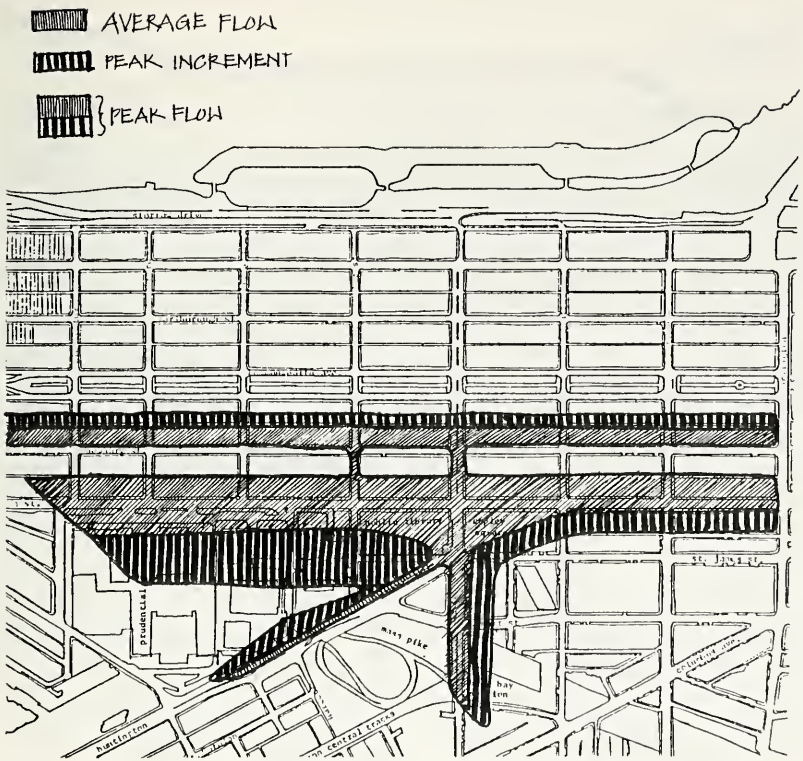
Indicators

There are three major types of phenomena which are important to this evaluation of the pedestrian zones in the Back Bay. Physical features, variety of activity, and nature and quantity of activity. These indicators, as explained in the appendix, are composite measures based on observed characteristics of a street.

Three key measures of the Back Bay ped environment will be considered briefly here:



Survey Locations



Relative Volumes

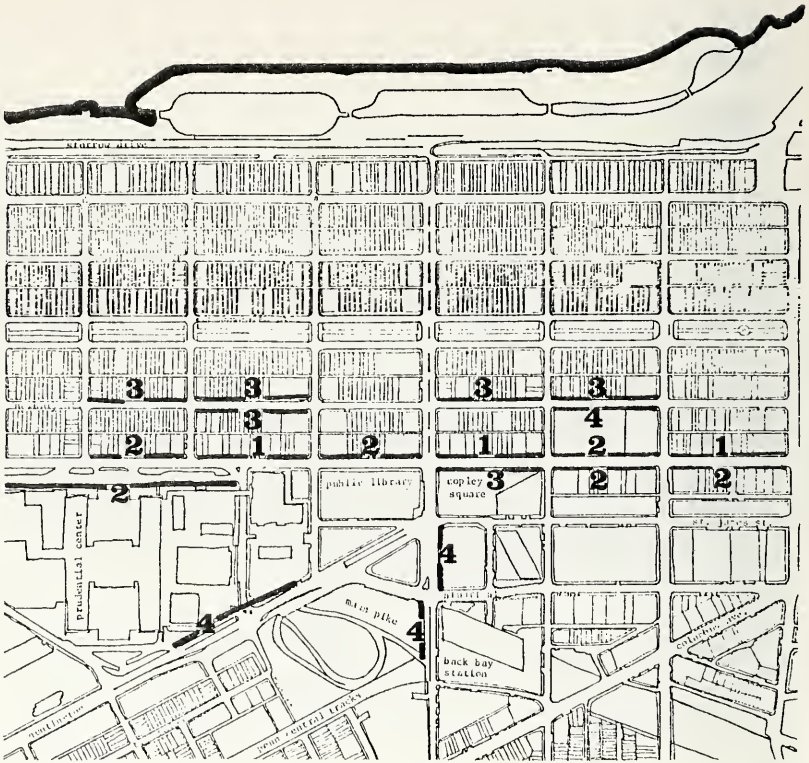
The first is relative volumes of peds. All persons in a data-collection photograph - on both sides of the street, whether walking, waiting, etc. - were included in this count. Two kinds of volume are recorded, the average volume and the peak. Copley Square has the highest average volume - with a slight increase to its peak volume. This increase is made up, primarily, of commuters coming and going to the MBTA station. Highest overall volume among areas surveyed was found at the Pru along Boylston Street. There is a significant difference at the Pru between peak and average volumes. Average volume is substantially lower than that at Copley Square, and the peak is of a quite different nature. Shoppers going to the supermarket and tourists make up the peak volumes at the Pru. Few go up to the plaza level, which, except for areas adjacent to shops, is generally empty. Office workers, particularly at lunch, add to this group giving a peak volume between 1:00 and 3:00 P.M. The third highest volume area is on Boylston Street between Clarendon and Arlington. There is moderate variation between average and peak volumes along this strip. Presence of a MBTA subway stop, as well as shops and restaurants attractive to lunchtime crowds, contributes to peak volumes. Newbury Street and Huntington Ave. are characterized by similar overall volumes and widely divergent average/peak relationships. Newbury Street has a steady average volume which varies little over the day. There is a slight peak in the afternoon between 1:30 and 3:30, consisting of shoppers, but practically no fluctuation in ped volume was observed at the 4:00 to 6:00 P.M. office rush hour. Volume varies slightly with location on Newbury; the end near Arlington Street is somewhat more active than the end near Mass. Ave. Huntington Ave. is quite different. Almost all pedestrian volume is the result of commuters during the 7:00 to 9:00 and 4:00 to 6:00 rush hours. Additionally, much of the Huntington volume results from one location - the street level connection at Huntington and Ring Road, between the rail access path to Back Bay Station and Huntington Ave. At off-peak hours this location, and most of Huntington from the Prudential to Copley Square, is very lightly used by pedestrians. Dartmouth St.

is also characterized by a substantial commuting volume; however a small stream of people continues throughout the day, thus reducing somewhat the difference between average and peak volumes.

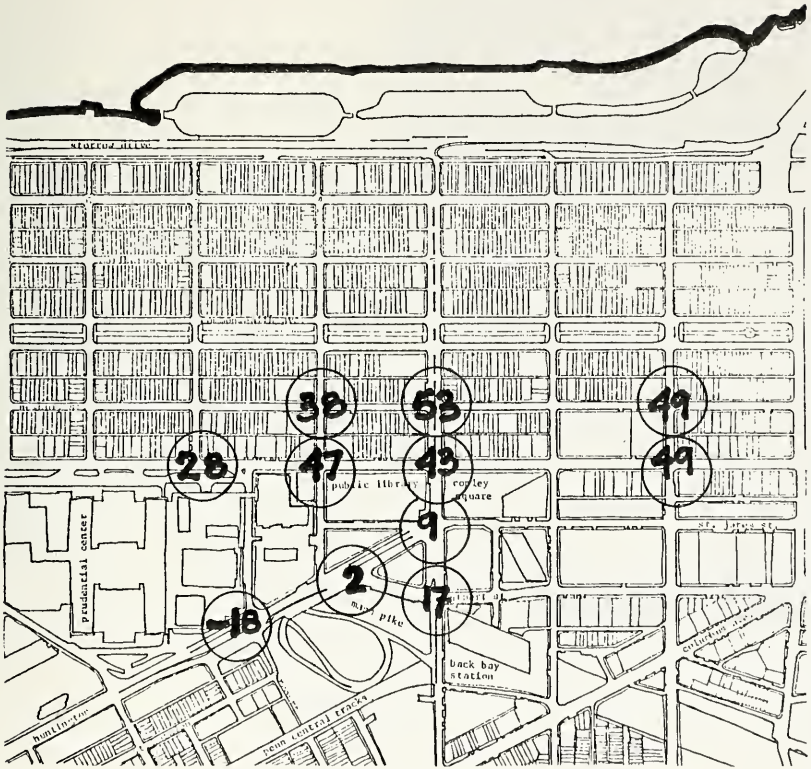
Street Activity

The second measure is street activity ranking. Street edges - defined as one side of a street on one street block - are ranked according to the amount and diversity of activity observable in the public zone. Street activity is different from number of peds, or volume. It is more a sense of activity, made up of the presence and actions of pedestrians, as well as the character of the street environment. There are physical things which make obvious the importance given to pedestrians along a street edge. Street level advertising or commercial display, presence of improved and widened walks, plantings and awnings all serve as evidence of concern for and as sources of attraction to peds. Along with other factors, as discussed in the appendix, these elements go into determining the activity level of a street. The quality of particular blocks, and the desirability of street activity in general, is not considered.

The most active street edges in the study area are along Boylston St., the least active along Huntington and Dartmouth. Edges of Boylston between Dartmouth and Clarendon (opposite Copley Square), between Berkeley and Arlington, and between Exeter and Fairfield (opposite Lord and Taylor) top the list. The best way to get a sense of what this means is to go and look at these sidewalks for a while. What they reveal is a balance between space, activity, and "equipment". The Boylston edge of the Prudential complex, and Copley Square itself, hold as many or more people and activities in the course of a day than these "most active" edges do - but do not seem as active, in part because their spatial and activity contexts are different. Both present very wide spaces in which the occupants disperse thinly. Especially at Prudential the space always seems empty. In both cases, non-pedestrian activities are added to this pedestrian space - cars at the Pru and exten-



Street Activity Ranking 1= MOST ACTIVE, 4= LEAST ACTIVE



Intersection Ranking HIGHER NOS. = EASIER CROSSING

sive sitting areas at both the square and the Pru. This also contributes to dilution of the ped edge. Activities are also missing - there are few shops on the wider edges. This absence of small scale, on-street ped "magnets" may be one of the most critical elements in perceived street activity. The most active edges, as well as many other less active edges (e.g. Newbury Street), are improved with varied surface textures, plantings, and street-crossing assistance devices - lights, crosswalks, etc. While least-active edges - Huntington and Dartmouth - generally lack these, such equipment is present on most other walkways in the study area. These physical amenities, then, appear to be necessary but not sufficient to produce active pedestrian environments.

Intersections

The final measure to be considered is intersection ranking. The physical characteristics of an intersection are the basis of this rank, which indicates how difficult it is for a pedestrian to walk around the entire intersection. Neither the volume of traffic passing through the intersection nor the volume of pedestrians crossing it are included.

A base intersection was selected to exemplify a "normal" condition - a right angle intersection of two 2-way streets, each with one lane in each direction. Other variables, as explained in the appendix, are considered and measured against this "normal" intersection.

The results indicate that crossing-assistance devices can substantially improve the intersection for pedestrians. This is insignificant if the equipment is broken, or if the street is so large that pedestrians can be stranded on islands, and if there are so few pedestrians that they are unexpected, vehicular traffic dominates, and only full traffic lights become adequate to provide safe crossings.

Intersections are ranked on the accompanying map. There are obvious problems along Huntington and Dartmouth St., while Newbury St. is generally the easiest to walk along.

Comment

Much of the existing commercial zone has already been improved for pedestrians. There are problem areas, however, and there is potential for problems resulting from new development. Many of these problems revolve around two issues: Connections and the balance between activity, form and usage.

Improvement of ped connections within the commercial area is the most pressing need facing the area. Existing sub-markets, as discussed in the transportation section, need to be tied together. Major links missing at present are: Copley Square to Back Bay Station, along Dartmouth Street; Mass. Ave. along Newbury and Boylston to Exeter Street; and across the Pru at Ring Road or Exeter Street. There are two aspects to the connection problem - one is distance. Newbury or Boylston from Arlington to Mass. Ave. is farther than most people will go on foot. Connecting the lengths of these streets to the Pru and Back Bay Station, possibly also the Copley Place and Auditorium expansion projects, requires a flexible, frequent mechanical method of reducing distance, a shuttle bus for example. The second aspect of the problem is the quality of the connection. This also encompasses some other problem areas within the zone.

It is certainly possible now to walk on Dartmouth from Copley Square to Back Bay Station, as it is possible to walk along the Prudential Boylston Street frontage or along Ring Road from Boylston to Huntington. None of these are pleasant routes, and are not heavily used. For them to become more useful additions to the ped network their "street activity" rankings need to rise. This implies, most strongly, opening active street level uses along these paths; second, providing shielding and more adequate separation from the traffic on adjacent streets; third, balancing the space available solely to peds with the number of users and the adjoining spatial context. In addition, some of the above mentioned "problem" paths also need intersection modification to make them really workable.

The renovation of Back Bay Station can certainly help in this upgrading and connecting. Expansion of Hynes Auditorium can provide a similar potential for reworking the lower end of Boylston Street and the Prudential Boylston frontage to produce a "magnet" area for commercial and pedestrian uses, in place of the existing no-man's land.

The Copley Place project, should it proceed, would make new connections as well as drastic improvement of old paths essential - particularly along Dartmouth and across the Pru to Boylston.

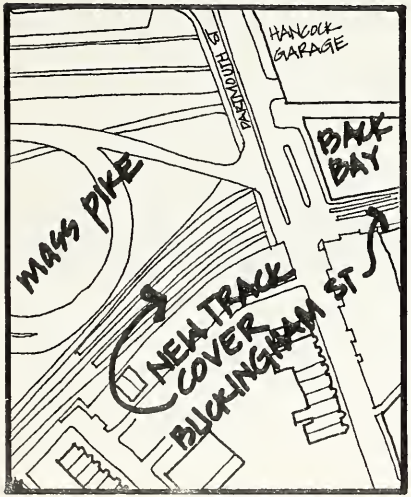
New Developments

Major new developments in the area include: Orange line relocation, reconstruction of Back Bay Station, Copley Place mixed use development, and expansion of Hynes Auditorium.

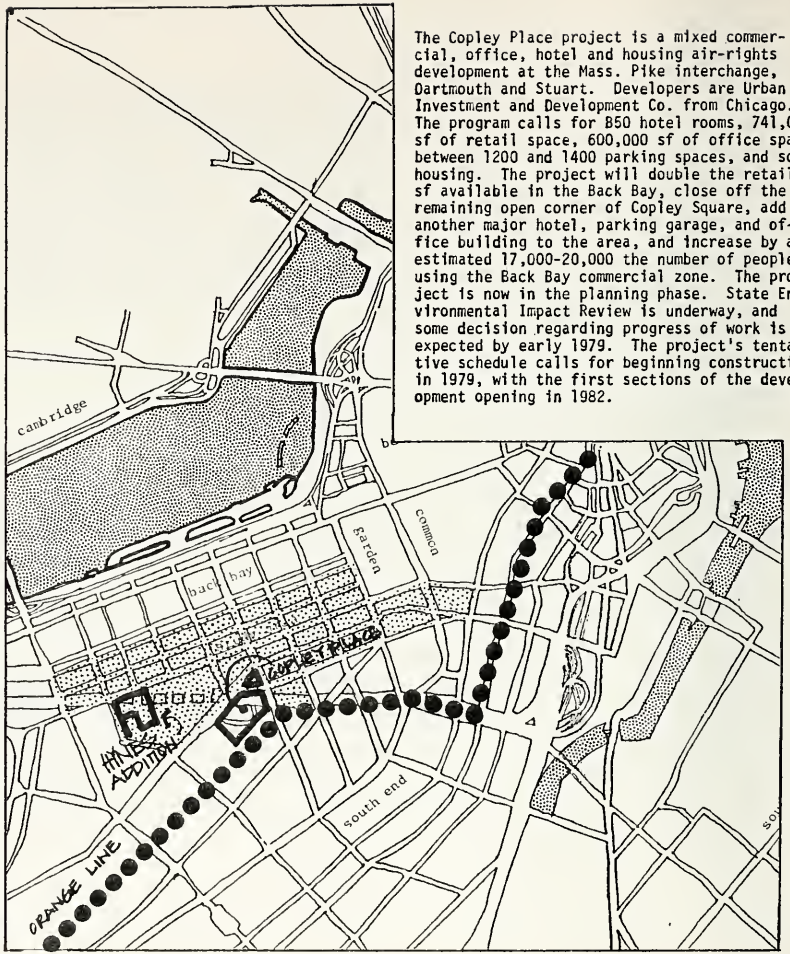
The Orange line and Back Bay Station projects are fairly certain to proceed, starting construction in 1979 and completing Back Bay area work by 1984. They are part of the Southwest Corridor Project, which involves, principally, relocating the Orange line, replacing service to the South End along Washington St., and constructing an arterial crosstown street. Among the changes affecting the Back Bay are the following:

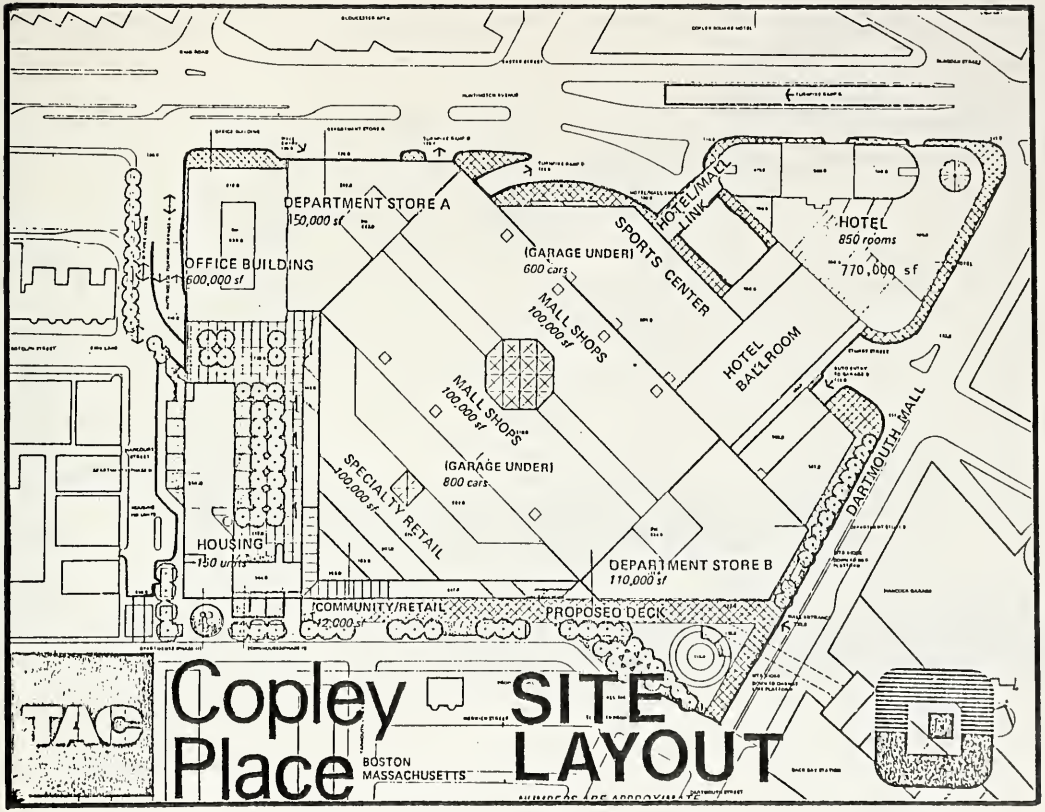
- Construction of new MBTA stations at Mass. Ave. & Huntington, and at Back Bay Station.
- Closing of Buckingham Street.
- Covering of the Penn Central tracks from Dartmouth to Mass. Ave.

Full information on this project is available from the project office, 131 Clarendon Street, Boston, MA, 02116.

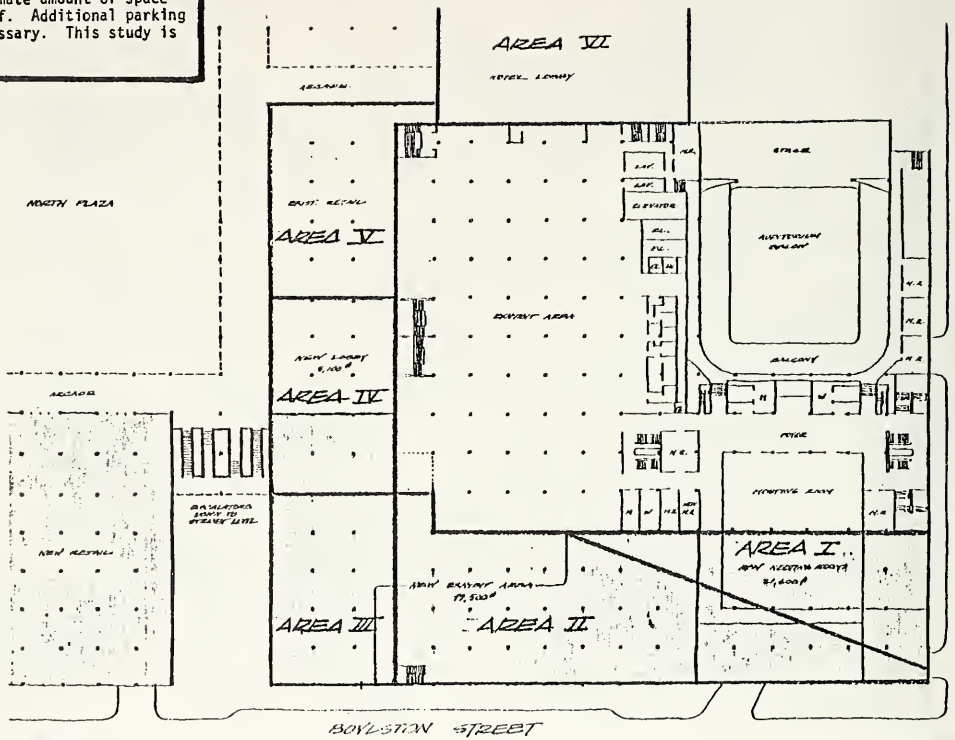


The Copley Place project is a mixed commercial, office, hotel and housing air-rights development at the Mass. Pike interchange, Dartmouth and Stuart. Developers are Urban Investment and Development Co. from Chicago. The program calls for 850 hotel rooms, 741,000 sf of retail space, 600,000 sf of office space, between 1200 and 1400 parking spaces, and some housing. The project will double the retail sf available in the Back Bay, close off the remaining open corner of Copley Square, add another major hotel, parking garage, and office building to the area, and increase by an estimated 17,000-20,000 the number of people using the Back Bay commercial zone. The project is now in the planning phase. State Environmental Impact Review is underway, and some decision regarding progress of work is expected by early 1979. The project's tentative schedule calls for beginning construction in 1979, with the first sections of the development opening in 1982.




DEPARTMENT STORE A
150,000 sf
OFFICE BUILDING
600,000 sf
HOTEL/MALL LINK
HOTEL
850 rooms
770,000 sf
SPORTS CENTER
(GARAGE UNDER)
600 cars
MALL SHOPS
100,000 sf
HOTEL BALLROOM
MALL SHOPS
100,000 sf
(GARAGE UNDER)
800 cars
SPECIALTY RETAIL
100,000 sf
DARTMOUTH MALL
HOUSING
150 units
DEPARTMENT STORE B
110,000 sf
COMMUNITY/RETAIL
12,000 sf
PROPOSED DECK
TAC
Copley Place
BOSTON
MASSACHUSETTS
SITE LAYOUT

The third, and least definite, project is expansion of the city's meeting facilities at Hynes Auditorium. The Boston Redevelopment Authority is examining extension of the present facility into the adjacent shopping space and Ring Road. Approximate amount of space added would be 92,550 sf. Additional parking spaces may also be necessary. This study is at a very early stage.

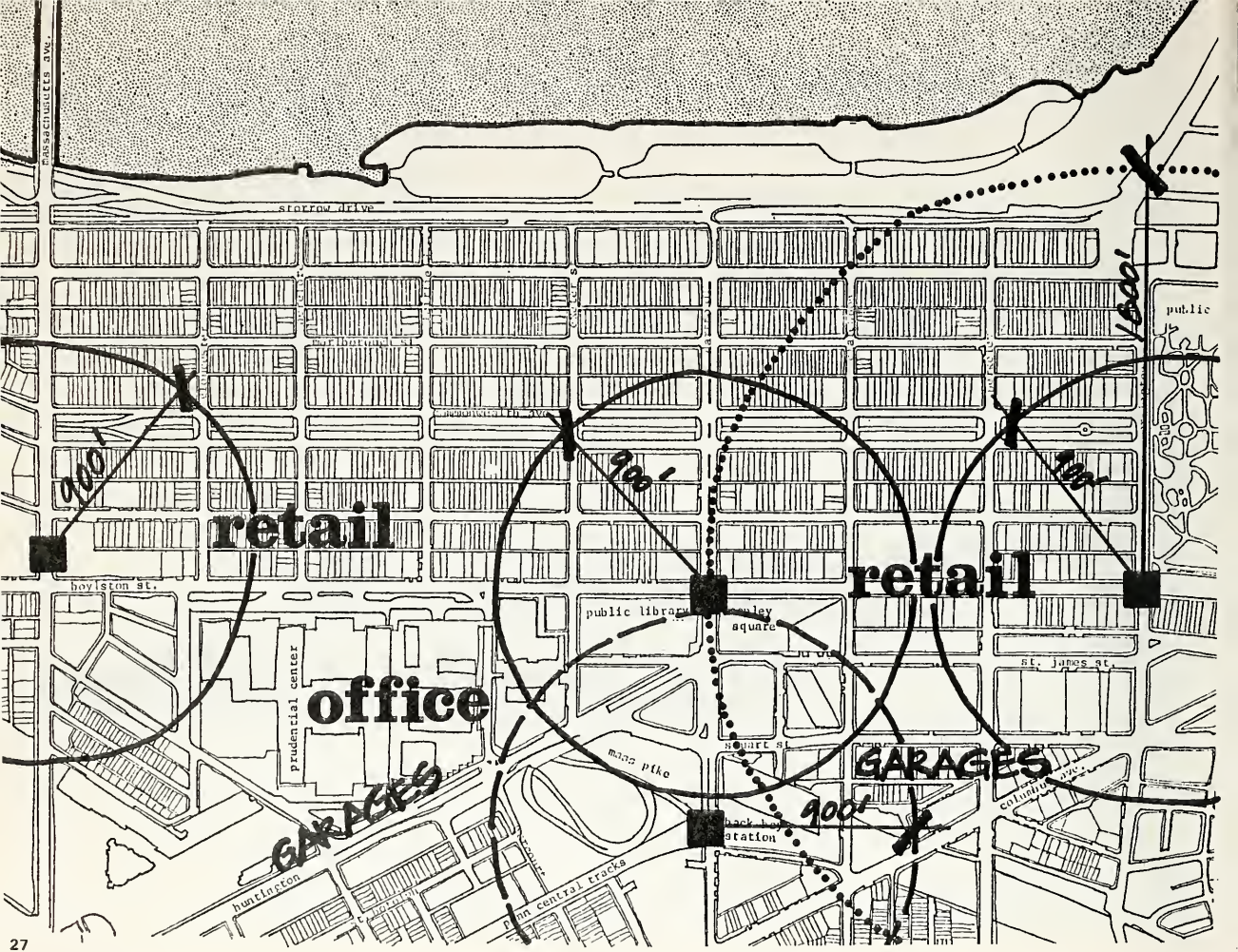


AUDITORIUM / PRUDENTIAL IMPROVEMENTS PLAZA LEVEL

BOSTON REDEVELOPMENT AUTHORITY URBAN DESIGN DEPARTMENT

2/3

Problems & Opportunities


massachusetts ave.
storrow drive
boylston st.
prudential center
public library
copley square
st. james st.
mass pike
huntington
conn central tracks
public
900'
900'
900'
1000'
retail
retail
office
GARAGES
GARAGES

Major Areas of Concern

Four major issues stand out from the information presented in this report. They can be stated as:

- Need for increased accessibility to commercial areas without increased dependence on auto use.
- Necessity of developing strong links among the various sub-areas of the commercial district in order to maintain the viability of the whole.
- Need for control of allowed vehicular activity.
- Necessity of reducing potential conflict between the needs of the commercial areas, and those of adjoining residential communities.

Accessibility & Internal Linking

Increased pressure on the transportation infrastructure of the Back Bay is inevitable, with or without the expansion of the commercial area represented by the Copley Place project and auditorium expansion. With these and doubtless other developments coming to the neighborhood, traffic volumes, demands for parking space, servicing and delivery requirements, and the press of shoppers, tourists, and conventioneers will all become greater. The parking freeze and the physical limitations of the present infrastructure both set limits to the amount of parking space and vehicular transportation which can be used to resolve these pressures. It is necessary, therefore, and desirable that ways be found to make access to and within the Back Bay easier, and to increase the area's capacity for handling numbers of people, while greatly reducing dependence on auto use.

Users arrive at some point in the Back Bay area by a number of means. This question of modal split (what percentage of people choose which means of travel) is under study by several groups (SWC, BRA, Copley Place), but the percentages applicable to the Back Bay are not fully established.

There is a general consensus in recent studies that at present approximately 50% of employees in the Back Bay come by public transit, 30% drive in, 9% come by train, and the rest by various non-motorized means. It is estimated that shoppers split more evenly, with 30% driving in, 30% taking the MBTA, and the rest walking. Determining the modal split is important to transportation planning for the neighborhood in relation to the rest of the city, but there is an additional consideration relating to movement within the commercial area. This is ease of movement within the district.

The transit improvements at Back Bay Station will, as already discussed, increase the number of people entering the Back Bay at its southeastern edge. This group, joined with those who leave their cars in the "garage belt", constitute a major volume of pedestrians on the opposite side of the Back Bay from established commercial areas. Green line riders are another substantial group, closer to the center of the district, but still in need of the ability to reach the edges of the area.

Given the location of parking spaces, especially those garage spaces dominated by employees and shoppers, and given the substantial percentages of people entering the area by walking or by walking from a transit stop, movement within the Back Bay commercial area is overwhelmingly pedestrian. Walking distances, obstacles and aids to pedestrians, and travel alternatives to walking within the area become, then, major factors in determining micro-markets.

The present commercial area is generally perceived to be divided into three zones - Boylston and Newbury from Dartmouth to the Common, Boylston and Newbury from Dartmouth to Mass. Ave., and the Prudential. While there is certainly considerable interchange of users among the three, there are also factors tending to confine users to one zone. The absence of east-west connections across the district adds to this problem. Dartmouth is the only street to fill this need, and it is in many sections not a desirable ped route. With the proposed development of the Mass. Pike site, another subarea would be created. This area does not have the easy proximity shared by the others, which have Boylston St. as a spine. In addition, the air-rights site is presently isolated by a hostile pedestrian environment which requires major improvement.

The accompanying map outlines the areas served by average and maximum walking distances in the Back Bay. These coincide with some of the perceived divisions in the Back Bay market. Breaking down the limits which may be defined by walking distance, and opening up the flow of pedestrian traffic in the commercial zone is essential to the commercial and continued environmental success of the Back Bay. These improvements should be undertaken both to connect the air-rights development, and to connect the transit users to Back Bay retail areas.

Conflict & Control

Provision of workable alternatives to increased vehicular/auto traffic will help reduce the congestion problems in the Back Bay, but there will continue to be considerable traffic. Delivery & service vehicles, tour and shuttle busses, short term parking, and general traffic are all features of the traffic picture now. Even with successful efforts to reduce the general level of auto use and limit parking in the neighborhood, these other uses will continue to be necessary, and will grow in volume. Traffic pressures may aggravate the problem of spill-over parking in the residential areas of the Back Bay, Bay Village, and South End.

Opportunities for Change

The presence of development activity by both private and public interests provides a lever as well as the necessity for change. A number of responses to the problems outlined in this report are possible. Those considered for the Back Bay include: Formation of special zoning or regulatory districts; development and implementation of a shuttle bus system; improvement of pedestrian connections and pedestrian environment in conjunction with new development and with renovation on Back Bay sites; and development of an area-wide marketing and publicity program. These will be examined in this section. Recommendations for action are in each discussion and at the front of this report.

The focus of alloptions is on joining the commercial sub-zones into an identifiable, imageable, and thoroughly accessible district. This does not imply homogenization of the area. The distinctive characters of sub-areas are probably inextinguishable. As Boston is enriched by the variety of its neighborhoods while gaining the benefits of joint action at a larger scale, the Back Bay commercial district can continue its development as one of the more pleasant and vital sections of the city, by assuring that new developments are linked in a sympathetic way to the existing fabric.

Joint Marketing

A program to accomplish the previously mentioned aims through this means would need the joint efforts of city, major area developers, businessmen, and residents. In addition to conveying the sense of the area's unity, such a program would have to emphasize pedestrian routes through the area, the variety of facilities and establishments present, and the means of access to and within the area. Details of the program should be developed by those mentioned above; funding could be provided by the city, developers, and merchants.

Shuttle Bus

A shuttle service is probably the simplest way to join the various commercial and transit nodes in the district. Shuttle services are most successful in areas which have population densities of at least 3000 persons per mile, the possibility of integration with other transit systems, and significant internal activity centers in the service area. The Back Bay is amply qualified, and its need for localized transit has already been considered.

To proceed with this idea, a separate study should be done with the assistance of a consultant. Specific needs for and purposes for the shuttle should be defined, alternative ways of meeting these needs examined - including the possibility of a trial program with leased equipment. The scope of the program - including marketing strategy, scale of operation and length/frequency of routes - can be established based on the specified needs and on a feasibility analysis which considers the following constraints:

- Marketing
- Management
- Operations
- Equipment
- Cost
- Institutional.

Shuttle programs, both fixed-route and demand responsive, have been underway in many cities in the past few years, so there is ample experience from which to draw in designing a service that can meet the Back Bay's needs effectively. The following notes frame some aspects of the program design which may be particular to the Back Bay's situation.

MARKET CHARACTERISTICS

PREDICTABILITY of route, stops, and timetable are important. Signage can be posted at stops to describe the route and timetable.Keeping to the timetable is a more complicated, but necessary element of service.

VISIBILITY - The service should be highly publicized, the vehicles readily identifiable, and the route directed along the most active streets. Familiarity resulting from this visibility will be important in increasing usage. Wherever possible, stops should coincide with established transit points. The Public Library, for example, and the Prudential are frequently used as starting points for special shuttles and tours. The advantages of this expectation, or familiarity of location, should be weighed against other advantages which might favor more obscure locations. At least one stop should serve these areas, as well as connecting to other nodes in the area, - e.g. Back Bay Station, Arlington and Mass. Ave. Stations.

MAGNETS - There are many types of destinations in the Back Bay which act as magnets. Some are nodes of activity - such as Copley Square. Others have specific purposes - such as department stores, restaurants, institutions, office concentrations, etc. A connecting loop could be formed for any one or two of these types of magnets - link all the department stores and shopping strips, or link the parking garages to the restaurants and entertainment establishments. These magnets should be identified, and the routes that result examined.

Appendices

DESIRE LINES - In addition to linking magnets of similar purposes, one can build routes on the basis of desire lines. The Common garage shuttle, for example, links a garage with the built up areas around the Common. There are similar needs in the Back Bay. The shuttle can link the garage belt to Newbury St., it can link shop to shop, job to shop, garage to institution, hotel to shopping strip or entertainment. The desire lines of major importance to the joining of the Back Bay should be identified and included in determination of a route.

DENSITY OF USES - Wherever possible within the operational constraints of waiting time, clarity of route, and other such concerns; the shuttle service should combine as many magnets and desire lines as possible. The Back Bay is not particularly large, and should be able to be linked effectively and comprehensively with a shuttle.

TIME - The advantages and disadvantages of altering the route with daily time cycle should be considered. The shopping service portion of the route is unlikely to be used at night, while there might be considerable use of a restaurant-entertainment loop.

COORDINATION - With other traffic to avoid adding to congested areas; with special regulations developed for control of bus and delivery traffic.

FINANCING - The shuttle program, as well as the feasibility study, should be supported by the Prudential and Copley Square developers, as well as other commercial users of the Back Bay, and the City of Boston.

PHASING - The service should be in place by the time Back Bay Station re-opens. Movement patterns will be in rapid change when the station opens; this service can be easily absorbed as an integral part of the new movement patterns that will result if it is available at this time and is publicized effectively.

1 Pedestrian Study

There is relatively little precedent available in doing pedestrian studies, and most of the literature concentrates on congestion or overcrowding as a dominant concern. Many of these studies are done in New York City. The problems of the Back Bay, and of much of Boston, are not with congestion, but are focused on generating enouch activity, and on maximizing the quality and accessibility of the pedestrian environment, rather than on ameliorating crowding problems. As a result, the methods used in this study, while they draw somewhat from the photographic techniques and identification of variables of other studies, were substantially developed for this work on the Back Bay.

DATA

Initial data from photographs was transferred from slides and maps onto three types of coding sheets. Locations and times of photographic surveys are shown on the accompanying chart. This data was supplemented with field checks and with data provided by other consultants.

The first phase was examination of maps and slide sequences (by street block unit) for permanent features - no. of stores, traffic lights, plantings, etc. The second phase was examination of time-dependent phenomena, as shown in the slides of a given street unit - e.g. presence of street vendors, types of pedestrian movement, and number of pedestrians. The third step was summation of the data into the three desired outcomes - relative volumes, street activity ranking and intersection ranking. Nature of the indicators will be considered first, followed by detailed notes on coding of information.

INDICATORS

Physical features are the most obvious. Included in this category are the condition, width and improvements to the walk-way; presence and condition of pedestrian assistance equipment - ped lights, curb cuts, etc.; traffic conditions - number of lanes, directions, traffic control systems, presence of lots or garages - are also in this category. The second type of measure is variety of activity. Included are the presence of temporary commercial uses and displays, as well as notation of the number of types of on-street activity observed. This measure is intended to distinguish between those areas which attract only one or two types of activity, and those which support a much richer variety. Duration of activity is also involved. Most sorts of activities have time cycles - and areas which cater exclusively to a single activity reflect these cycles. Huntington Ave., for example, is used primarily for commuting to and from work. Few other activities take place there, so the pedestrian areas are only sporadically active. At the other extreme, Copley Square supports many different types of activities - from sitting on benches for long periods, to commuting, eating, playing, etc. Many time/activity cycles overlap at the square, and it is constantly inhabited. Variety of activity does not imply anything about the desirability of that activity.

The third type of measure is the nature and quantity of pedestrian activity. This encompasses number of peds, number and type of land uses adjacent to walkways, and presence/absence of MBTA or other pedestrian nodes.

CODING

Time dependent data was coded on sheets such as that accompanying. From this data four numbers are produced, average ½ hour ped volume, peak ½ hour volume, mobile commercial score and pedestrian entropy score.

Non-time dependent information was recorded on a street survey form. Column 1 is the aggregate variable name; column 2 the item number; column 3 the question name; column 4 is for slide reference numbers; column 5 is the value of the response; column 6 is the actual score given; column 7 is for indication of whether the element is at an intersection. Streets are coded by letter name, which appears at the lower left hand corner of the street survey sheet. Aggregate variable scores are recorded adjacent to name. The principle of scoring is that the values in column 5 are allocated such that throughout the survey the scores in column 6 can simply be added, with the result that higher numbers always mean more desirable conditions. Values in Column 5 were established with regard to the urban character of the area and the commercial aims of the area's development. opment.

RANKING METHODS

Relative volumes is straightforward application of recorded volumes to specific locations, and extrapolation of this data to specific areas and walkways.

Intersection ranking is also quite simple. Each intersection is broken down into the movements required to go around it, as shown on the accompanying chart. Each intersection is numbered, as on the key map. Each of the movements is related to a previously surveyed street edge, and from these surveys aggregate scores for traffic conditions, pedestrian equipment and sidewalk condition are taken. All three scores for each movement through the intersection are summed to give the intersection score. As in the street surveys, higher scores are preferable; the higher the score, the easier the intersection is to cross. In those cases where adjoining street edges were not surveyed, the relevant scores were prepared for the movements necessary to the intersection score. Street activity ranking is somewhat more complex. Nature of activity, walk condition and pedestrian equipment aggregate scores were taken from the street surveys. Volume, mobile, commercial and pedestrian en-

tropy scores were all modified to rank, rather than absolute, numbers, to avoid giving these variables undue weight in the overall ranking.

Volumes were broken down into a range and new numbers assigned from 1-7, mobile commercial and ped entropy were treated similarly, so that, for example, Boylston, at edge B, and Newbury at edge Y have the following scores:

	B	Y
Activity, nature of	7	7
Walk condition	10	4
Ped. equipment	5	3
Ped. volume	5	3
Mobile commercial	0	0
Ped entropy	4	2
Total	31	19

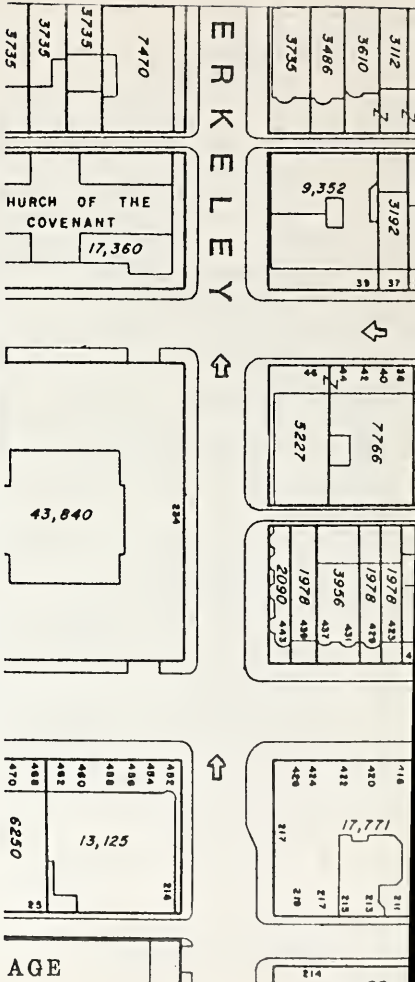
DATA COLLECTION SUMMARY CHART

PEDESTRIAN STUDY - BACK BAY - 6/78

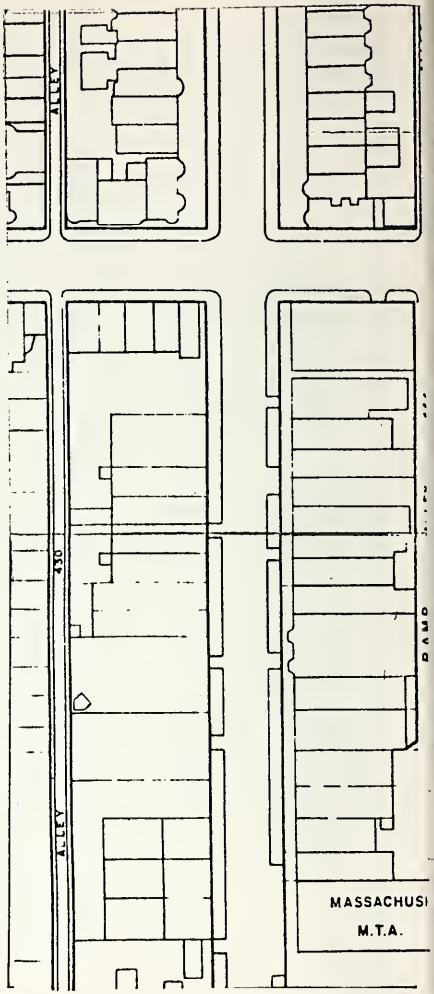
LOCATION	TIME		
	Weekday A.M.	Weekday P.M.	Saturday P.M.
Prudential Ring Road @ Boylston	2	6, 7	12
Huntington & Ring Road	1		
Copley Square	3	10, 8	
Boylston Street		11, 5	14
Upper Newbury St.		4	13
Lower Newbury St.		9	

Numbers indicate roll no. of slide documentation.

DATE LOCATION	TIME	SLIDE REF	NO. PEDS	83	82	81	76	77	78	79	80	NOTES
				0	1-3	4+	0	WAIT	BROW	THROUGH	ON ST	
				0	1	2	0	1	1	1	1	



1	2	3	4	5	6	7	NOTES
CONDITION OF SIDEWALK	1	Width 30'-40'		3			
	2	20'-30'		2			
	3	10'-20'		1			
	4	5'-10'		0			
	5	5'		-1			
	6	Width Reductions - A		-1'			
	7	B Store Display		-1.5'			
	8	C Temporary Use		-3'			
	9	D Adjacent hard surf.		-4'			
	10	E Adjacent traffic		-5'			
	11			-8'			
	12			-10'			
	13	Effective Width					
	14	Adequacy - Excessive		1			
	15	OK		0			
	16	Inadequate		-1			
	17	SURFACE VARIETY Improved		02			
	18	Adequate differentiation		1			
	19	Same as street		20			
	20	REPAIR: Of surface OK		1			
	21	Damaged		0			



Street Survey

1	2	3	4		5	6	7
	22	Furnishings & Plantings	OK		1		
	23	damaged			0		
PEDESTRIAN EQUIPMENT	24	Marked croswalk yes			0		
	25	no			-1		
	26	Curb cuts yes			0		
	27	no			-1		
	28	Ped phase ok			3		
	29	too short			1		
	30	none			0		
	31	Stop light			2		
	32	4-way stop			1		
	33	2 way stop			0		
	34	No traffic control			-1		
TRAFFIC CONDITIONS	35	Number of lanes 2			1		
	36	4			0		
	37	6			-1		
	38	8			-2		
	39	Number Islands/Medians	0		1		
	40		1		0		

1	2	3	4	5	6	7
	41	2		-1		
	42	3		-2		
	43	4+		-3		
	44	Number Traffic Directions		+2		
	45	Moving across Ped lane 2		+1		
	46	3		0		
	47	4		-1		
	48	5+		-3		
	49	Lane Definition Clear		+1		
	50	Unclear		0		
	51	Lane Directions 90^0		0		
	52	at Ped lane curve		-1		
	53	merge		-2		
	54	Garage/lot access no		0		
	55	yes		-1		
	56	Number of lights 0		1		
	57	1		0		
	58	2		-1		
	59	3+		-2		

1	2	3	5	6	7	4
NATURE OF ACTIVITY	60	Adjacent uses - More than 15 store entries	3			
	61	10-15 store entries	2			
	62	less than 10 " "	1			
	63	office only	1			
	64	residential/other	0			
	65	Transit Bus	1			
	66	subway	1			
	67	none	0			
	68	Street level advertising yes	1			
	69	no	0			
	70	Street furniture yes	1			
	71	no	0			
	72	Planting yes	1			
	73	no	0			
	74	Awning/weather protection yes	1			
	75	no	0			

2 References

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